INTRODUCTION

Tuberculosis remains the number one killer infectious disease affecting adults in developing countries The 1990 WHO report on the Global Burden of disease ranked TB as the seventh most morbidity causing disease in the world and expected it to continue in the same position up to 2020. Eachyear,8.74 million develop tuberculosis and neary 2 million die. This means that someone somewhere contracts TB every four seconds and one of them dies every 10 seonds. WHO 2006 report on global Tuberculosis control published on March 24th, world TB Day, once again ranks India as world,s most heavily affected country. It was estimated that there were 1.8 million newTB cases in India in 2004; that is, one in five of all cases worldwide. Roughly, 330000 people died with TB in 2004. Nearly 1000 people every day. These figures put India some way ahead of the second ranking country, china, which had about 1.3 million new episodes of TB in 2004. In 1993, WHO declared TB a global emergency and devised the directly observed Treatement short course (DOTS) strategy and recommended that all countries adopt this strategy.

The strategy is built on five pillars, viz. political commitment and continued funding forTB control programmes, diagnosis by sputum smear examination, Uninterrupted supply of high quality anti-TB drugs, Intake under direct observation, and Accurate recording and reporting of all registered cases.The change in number of sputum from three to two under RNTCP was a retrograde step made by research support.In addition, the RNTCP recommends exa oftwo sputum smears in two days for diagnosis. This may not be practicable under all condition, especially in difficult areas. It further adds to the delay thediagnosis & initiation of treatment, increase spread of disease in community and causes inconvenience to patients as well as for the health system.

Pulmonary TB represents an important worldwide public health problem. Tuberculosis remains a leading cause of death

globally. In 2005 there were an estimated 8.8 million new cases of tuberculosis worldwide[1]. Incidence of tuberculosis is greatest among those with conditions impairing immunity[20],such as diabetes.

In India 18% of patients with pulmonary tuberculosis have diabetes[1].

Tuberculosis remains a major cause of mortality in developing countries and in these countries, diabetes prevalence is increasing rapidly[2]. At present an epidemic of DM is ongoing both in developed and developing countries. With recognition of this explosive increase in number of people diagnosed with DM all over the world, a whole new field of related interaction between DM and pulmonary tuberculosis has been thrown open[3].Consistent with this, a recent case control Study from India of risk factors for TB found a univariate odds ratio of 1.8 for previously diagnosed diabetes, which strengthened to 2.44 when controlled for other risk factors, including low socioeconomic status.

Studies have noted that the risk of developing TB was 11 to 18 times greater in Diabetics than in normal population[2].Increased reactivation of tuberculosis lesions has also been recorded in diabetics. At the same time, tuberculosis appears to aggravate hyper glycaemia, with patients requiring higher than before doses of insulin.

As much as 14.8% of pulmonary tuberculosis and 20.2% of smear-positive i.e. infectious tuberculosis may be directly linked to diabetes. Diabetes is also probably responsible for

the urban incidence of smear positive tuberculosis being 15.2% higher than that in rural areas[3].

PROFORMA

Name: Date of Admission:

Age: Date of Discharge:

Sex: Indoor/ Outdoor No:

History:

C/C:

COMPLAINTS	DURATION
Cough with expectoration	
Breathlessness	
Fever	
Weight loss	
Hemoptysis	
Anorexia	
Weight loss	
Chest pain	

Past History:

History of Tuberculosis

History of Diabetes

Duration

Treatment -OHA

-Insulin

Immunization status of BCG

History of IHD/ HT

Family History:

History of Tuberculosis

History of Diabetes to any Family member

Personal History:

Diet: Veg. / Non Veg.

Appetite: decreased/ increased

Sleep: normal/ disturbed

Bowel /Bladder

Habit: Smoking

Alcohol

- GENERAL EXAMINATION:
- Vitals: T : Pallor

P : Clubbing

BP : Lymphadenopathy

RR : Cyanosis

Icterus

Edema feet

- Respiratory system examination
    - Inspection
    - Palpation
    - Percussiom
    - Ausculatation
- Other systems examination:
- **INVESTIGATIONS :**
- **Blood Investigations**
    - CBC with ESR, LFT,RFT
    - RBS, FBS, PP2BS, HB1AC, S. lipid profile
- Radiological Investigations:
    - X-ray chest
    - USG Thorax ,USG KUB (if Required)
    - CT Thorax (if required)
- ECG
- Urine Routine
- Urine culture (if required)
- Sputum Examination:
    - Sputum AFB -Mycobacteria

      - Culture AFB (if required)

- CBNAAT (if required)

- LPA (if required)

  - Sputum C/S (Pyogenic organism)

- Mantoux test
- Bronchoscopy(if required)
  - BAL AFB

laboratory materials

The following laboratory materials should always be available in the laboratory;

Chemical & Reagents

.Carbol fuchsin(1%)

Sulphuric acid(25%)

Methylene blue(0.1%)

Synthetic immersion oil

Methylated spirit

5% Phenol

Silica gel

Consumables

Glass slides for microscopy & slide boxes for storing slides

Diamond markers

Broom sticks

Glass rods

Staining racks

Sputum containers

Spirit lamp

Foot operated bin

Lens paper

Filter paper

Stationery

Laboratory forms for sputum examination

Laboratory Register

Estimated quantity of reagents & materials required for 1000 smears

Carbol fuchsin(1%)—5000ml

Methylene blue(0.1%)—3000

Sulphuric acid(25%)—6000

Immersion oil—50ml

Phenol 5%--200liter

Methylated spirit—1000ml

Filter paper(whatmann no-1 pack of 100)—1 pack

Filter paper—1 pack

Lens paper(book of leaves)—20sheets

Lint cloth or fine silk—5

Diamond marker—4

Grease pencils or marking pens—4

Sputum containers—1100

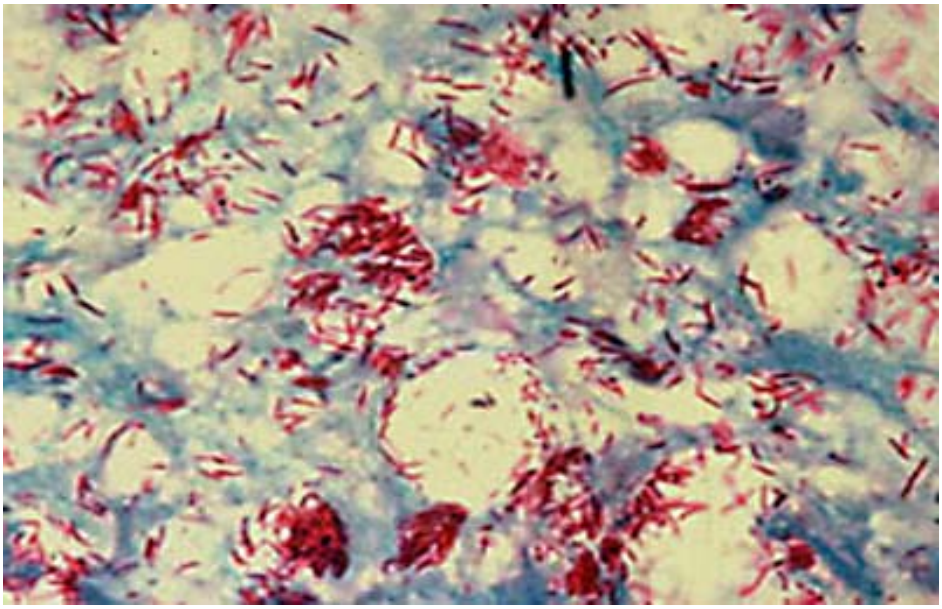
Broom sticks—1100

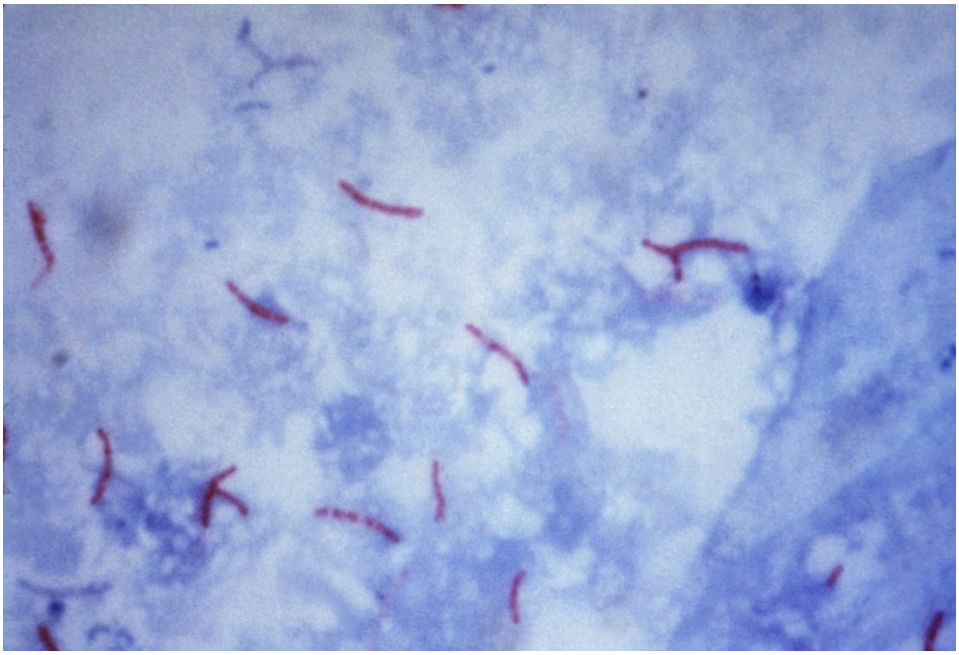
New glass slides—1100

Slides box(100slides)—11

Black/Red disposal bags of bio degradable material—100

Silica gel—100gms





MORPHOLOGY OF M. Tuberculosis[17]

- Slightly curved or straight bacilli.
- 0.2 to 0.6 by 1.0 to 10 μm size.
- Filamentous or mycelium like growth may occur.
- Cell wall with high lipid content that includes mycolic acid with long branched chain.
- The mycobacterial cell-wall contains mesodiaminopimelic acid(DAP) and outer lipid bilayer.
- The envelope consists of two distinct parts- The plasma membrane and around it the cell wall.
- Mycobacterial membrane has some distinctive components notably the lipopolysaccharides, lipoarabinomannan (LAM), lipomannan and phosphotydyl inositol
- Cell wall core is composed of three covalently attached macro molecules: peptidoglycan, arabinoglycan and mycolic acid.

Staining:

- Not readily stained by Gram's Stain.
- Ziehl – Nielsen Stain is required to stain bacilli.
- Once bacilli have been stained they are not easily decolorized by acid or alcohol. This resistance to decolorization is called acid-fastness. Acid-fastness is due to mycolic acid.

- Fluorescence stain may be useful in some cases.

RESULTS

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Name of DMC----------SMIMER----------

Lab Serial No----------

Date of Exam.	Specimen	Visual Appearance (M,B,S)	Results Neg. or (pos)	Positive(grading)3+	2+	1+	3Scanty*	
	a	M						
	b	M						
	c*	M						

M=Mucopurulent, B=Blood stained, S=Saliva

AFB seen in 100 oil immersion fields

a=Spot sample

b=Morning sample

c*=Same day sputum after First sample " a" (1-day protocol)

Date---------- Signature of Lab. Technician.

Results

Total no patients=440

No. of patients did not deposits Morning sample (2-Day sample)=16 ie=3.6%

No.of patients in which only morning sample are deposited=2

No. of patients in which All three samples are Negative=6

No of patients in which 1st sample spot ie(a) are Negative=12

No of patients in which 2nd spot sample ie (b) are Negative=5

No of patients in which All three sample with Scanty AFB present=24

		1st spot(a) 1-Day	2nd spot(b) 1-Day	Morning sample 2nd day (c)
No of pts.with Grade	1+	140	155	112
No. of pts With Grade	2+	111	112	105
No of pts with Grade	3+	131	133	162
No of pts with grade	Scanty AFB	37	25	36
	Total	419	425	415
	% of Total	95.2%	96.5%	94.3%

A Total of 440 cases were recruited in the study

Sixteen patients (3.6%) did not report to the laboratory on the second day .

The 2-day protocol ie (Morning sample) was capable of detecting 415 patients (94.3%)were smear positive.

In the 1-day 1st spot sample ie (a) protocol 419 patients(95.2%) were smear positive.

In the 1-day 2nd spot sample ie (b) protocol, 425 patients (96.5%) were smear positive.

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		440	50.1	50.1	50.1
	F	98	11.1	11.1	61.2
	M	342	38.7	38.7	99.9
			.	.	
	Total		100.0	100.0	

Report

Age

Sex	Mean	N	Std. Deviation
F	29.7449	98	12.74113
M	36.7632	342	13.75165
Total	35.2000	440	13.83143

Statistics

Age

N	
Mean	35.2486
Std. Deviation	13.92763

Discussion

In this paper

We have shown that an alternative 1-day protocol forsputum collection could be equally effective, compared to a 2-day protocol.

The advantages of adopting a 1-day protocol are manifold;

_Reduces the number of patients visits

Decreases drop-out rates

Reduces the diseases transmission among the contacts of these patients

Being a more patients- friendly protocol, the 1-day approach could help in achieving and improving the current target of RNTCP to dectect 70% of new smear positive cases in the population.

CONCLUSION

_The 1-day protocol of sputum collection was found to deliver statistically similar results compared to

The currently recommended 2-day protocol

.Similar study needs to be conducted in a broader scale at community based peripheral Health

Institutes,to decide on the feasibility of its incorporation at a National level

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